New Data at Cure SMA Highlight Potential Benefit of SPINRAZA® (nusinersen) in Infants and Toddlers with Unmet Clinical Needs After Gene Therapy

June 30, 2023

- Interim results from the RESPOND study show improved motor function in most participants treated with SPINRAZA after Zolgensma® (onasemnogene abeparvovec)
- Biogen also reported new real-world evidence and progress on the development of a novel device to enhance the patient treatment experience

CAMBRIDGE, Mass., June 30, 2023 (GLOBE NEWSWIRE) -- Biogen Inc. (Nasdaq: BIIB) announced new SPINRAZA® (nusinersen) data aimed at answering critical questions for the spinal muscular atrophy (SMA) community. The data were presented at the SMA Research & Clinical Care Meeting hosted by Cure SMA this week in Orlando, Fla.

"Cure SMA's annual conference is a unique opportunity to connect with and learn from the health care providers, patients and caregivers in attendance and share research intended to address the unmet needs of the SMA community," said Maha Radhakrishnan, M.D., Chief Medical Officer at Biogen. "We are pleased to present our new data, including early results from the RESPOND study evaluating the clinical benefit and safety of SPINRAZA treatment after gene therapy."

Interim Clinical Outcomes from RESPOND

RESPOND is an ongoing two-year, phase 4 open-label study to evaluate clinical outcomes and safety following treatment with SPINRAZA in infants and toddlers with SMA who have unmet clinical needs after treatment with Zolgensma® (onasemnogene abeparvovec). Interim efficacy results at six months from 29* study participants treated with SPINRAZA show:

- Improvements in motor function in most participants as measured by increased mean total Hammersmith Infant Neurological Examination Section 2 (HINE-2) score from baseline
  - Participants with two SMN2 copies (n=24) improved by a mean of over 5 points on HINE-2
  - All participants with three SMN2 copies (n=3) improved; a mean change from baseline was not calculated due to the small number of participants
- Most participants (25/27) with investigator-reported suboptimal motor function at baseline improved

After a median of 230.5 days in the study, serious adverse events (AEs) were reported in 13/38 (34%) participants. No serious AEs were considered related to SPINRAZA or led to study withdrawal. No new emerging safety concerns have been identified in enrolled participants who received SPINRAZA after Zolgensma. Additional interim clinical outcomes from the RESPOND study are being presented at the conference.

"We are learning that gene therapy may not be treating all motor neurons leaving the potential for disease progression," said Crystal Proud, M.D., Pediatric Neurologist at Children's Hospital of the King's Daughters. "The RESPOND study has begun to characterize remaining unmet need in some SMA patients treated with Zolgensma whose outcomes have not met clinical expectations. These interim results provide the community with the first clinical study data evaluating SPINRAZA treatment following Zolgensma and suggest there may be potential for additional benefit with SPINRAZA treatment."

New Analysis Evaluating Real-World Impact of SPINRAZA

A systematic literature review and meta-analysis evaluating real-world impact of SPINRAZA for infantile-onset SMA was presented and highlights the importance of generating real-world evidence to achieve a comprehensive understanding of the treatment benefits of SPINRAZA. Improvements in motor function and motor milestones observed in real-world studies were greater than or comparable to those observed in clinical trials, and patients continued to improve with longer duration of SPINRAZA treatment.

Progress on Novel Device Aimed at Enhancing Treatment Experience

Together with Alcyone Therapeutics, Biogen is working to develop the first implantable device designed to enable routine subcutaneous access for delivery of antisense oligonucleotide therapies. This week, Alcyone announced that the U.S. Food and Drug Administration has approved an Investigational Device Exemption to initiate a pivotal trial of the ThecaFlex DRx™ System (ThecaFlex). This summer, Alcyone plans to begin initial enrollment of the PIERRE study (clinicaltrials.gov), which will evaluate the safety and performance of ThecaFlex for the delivery of SPINRAZA in SMA patients.

About SPINRAZA® (nusinersen)
SPINRAZA is approved in more than 60 countries to treat infants, children and adults with spinal muscular atrophy (SMA). As a foundation of care in SMA, more than 14,000 individuals have been treated with SPINRAZA worldwide.[1]

SPINRAZA is an antisense oligonucleotide (ASO) that targets the root cause of SMA by continuously increasing the amount of full-length survival motor neuron (SMN) protein produced in the body.[2] It is administered directly into the central nervous system, where motor neurons reside, to deliver treatment where the disease starts.[2]

SPINRAZA has demonstrated sustained efficacy across ages and SMA types with a well-established safety profile based on data in patients treated up to 8 years,[3] combined with unsurpassed real-world experience. The nusinersen clinical development program encompasses more than 10 clinical

studies, which have included more than 460 individuals across a broad spectrum of patient populations, including two randomized controlled studies (ENDEAR and CHERISH). The SHINE and NURTURE open-label extension studies are evaluating the long-term impact of SPINRAZA. The most common adverse events observed in clinical studies were respiratory infection, fever, constipation, headache, vomiting and back pain. Laboratory tests can monitor for renal toxicity and coagulation abnormalities, including acute severe low platelet counts, which have been observed after administration of some ASOs.

Biogen licensed the global rights to develop, manufacture and commercialize SPINRAZA from Ionis Pharmaceuticals, Inc. (Nasdaq: IONS). Please click here for Important Safety Information and full Prescribing Information for SPINRAZA in the U.S., or visit your respective country's product website.

About Biogen
Founded in 1978, Biogen is a leading global biotechnology company that has pioneered multiple breakthrough innovations including a broad portfolio of medicines to treat multiple sclerosis, the first approved treatment for spinal muscular atrophy, and two co-developed treatments to address a defining pathology of Alzheimer's disease. Biogen is advancing a pipeline of potential novel therapies across neurology, neuropsychiatry, specialized immunology and rare diseases and remains acutely focused on its purpose of serving humanity through science while advancing a healthier, more sustainable and equitable world.

We routinely post information that may be important to investors on our website at www.biogen.com. Follow us on social media - Twitter, LinkedIn, Facebook, YouTube.

Biogen Safe Harbor
This news release contains forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, about the potential benefits, safety and efficacy of nusinersen; the potential benefits of our collaborations, including with Alcyone; the potential benefits of an implantable device designed to enable the administration of ASO therapies; the results of certain real-world data; our research and development program for the identification and treatment of SMA; clinical development programs, clinical trials and data readouts and presentations; the potential benefits and results from treatment of SMA; and risks and uncertainties associated with drug development and commercialization. These statements may be identified by words such as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "goal," "intend," "may," "plan," "possible," "potential," "will," "would" and other words and terms of similar meaning. You should not place undue reliance on these statements or the scientific data presented.

These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including without limitation, risks relating to the occurrence of adverse safety events and/or unexpected concerns that may arise from additional data or analysis; the risk that we may not fully enroll our clinical trials, or enrollment will take longer than expected; failure to obtain regulatory approvals in other jurisdictions; risks of unexpected costs or delays; failure to protect and enforce our data, intellectual property and other proprietary rights and uncertainties relating to intellectual property claims and challenges; regulatory authorities may require additional information or further studies; product liability claims; third party collaboration risks; and the direct and indirect impacts of the ongoing COVID-19 pandemic on our business, results of operations and financial condition. The foregoing sets forth many, but not all, of the factors that could cause actual results to differ from our expectations in any forward-looking statement. Investors should consider this cautionary statement as well as the risk factors identified in our most recent annual or quarterly report and in other reports we have filed with the U.S. Securities and Exchange Commission. These statements speak only as of the date of this news release. We do not undertake any obligation to publicly update any forward-looking statements.

Note:
* Two participants in the RESPOND study were not assessed at Day 183 and, therefore, not included in the mean calculation.

References:

1. Based on commercial patients, early access patients, and clinical trial participants through December 31, 2022.
2. SPINRAZA U.S. Prescribing Information. Available at: https://www.spinraza.com/content/dam/commercial/specialty/spinraza/caregiver/en_us/pdf/spinraza-prescribing-information.pdf. Accessed: June 2023.
3. Core Data sheet, Version 13, October 2021. SPINRAZA. Biogen Inc, Cambridge, MA.

MEDIA CONTACT:

Biogen
Jack Cox
+ 1 781 464 3260
public.affairs@biogen.com

INVESTOR CONTACT:

Biogen
Chuck Triano
+1 781 464 2442
IR@biogen.com